Psychiatry and Clinical Neurosciences 2009; **63**: 101–106 doi:10.1111/j.1440-1819.2008.01898.x

Regular Article

Health service utilization in patients with major depression and co-morbid pain

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Aims: Patients with depression often have co-morbid pain symptoms. However, rates of service utilization by psychiatric in-patients with co-morbid pain symptoms are unknown. The purpose of this study is to estimate whether patients with major depression and co-morbid pain access medical treatment for their pain as much as their counterparts with psychiatric diagnoses other than major depression.

Methods: A total of 103 patients (62 female; 41 male) were assessed for a diagnosis of major depression applying a psychiatric clinical interview followed by a self-report pain questionnaire, which assessed physical pain in psychiatric patients.

Results: Patients with major depression reported higher rates of pain symptoms in the past 6 and 12 months than their counterparts with a psychiatric diagnosis other than major depression. Analysis of variance showed that patients with depression were less likely to attend medical and specialist services for their pain symptoms than their counterparts. On the contrary, depressed patients with pain attended more frequently general in-patient services than non-depressed patients with pain.

Conclusions: Patients with depression suffer high rates of pain symptoms, but are at higher risk of not accessing appropriate services suggesting inadequate service utilization. The results have implications for screening and health care delivery for psychiatric patients with pain.

Key words: comorbidity, depression, health service utilization, pain.

PAIN SYMPTOMS ARE among the most disabling and distressing symptoms that patients experience.[1] Lyndsay and Wyckoff examined the rates of depression in pain centre patients and found that around 87% of their patients referred for pain symptoms were depressed.[2] Indeed, it appears that persons with pain have high rates of associated depressive symptoms and their quality of life is markedly affected.[3,4] Ericsson *et al.* (2002) found that depression was an important disability predictor in long-term chronic pain patients, indicating a correlation between depression and pain.[5] This association is supported by evidence that effective and well coordinated medical interventions can significantly improve the psychological outcomes for pain sufferers.[6] Treating co-morbid depression in sufferers of pain can also reduce morbidity and improve quality of life.[7–9]

Unfortunately, epidemiological evidence suggests that pain sufferers often do not access appropriate treatments,[10] and therefore often receive suboptimal care. An essential aspect of effective interventions is therefore access and attendance to appropriate medical treatment. Consequently, understanding the factors that might impede depressed patients with pain symptoms accessing medical services is important in planning interventions. Given that pain

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Received 9 July 2008; revised 30 July 2008; accepted 14 September 2008.

sufferers do not readily access medical treatment and that depression is often associated with physical pain, it is of importance to estimate the rate of service utilization by depressed patients with co-morbid pain. The present study will seek to investigate rates of service utilization by psychiatric in-patients with co-morbid pain symptoms as well as estimate whether depressed patients with co-morbid pain access medical treatment for their pain as much as their counterparts with a psychiatric diagnosis other than major depression.

METHODS

Study population

All patients admitted to a psychiatric hospital of general adult psychiatry (Westphalian Hospital for Psychiatry, Guetersloh, Germany) over a four-month period were assessed for the presence of pain symptoms. The catchment area is the city of Gutersloh, a city of approximately 100 000 inhabitants in northern Germany. The sample contained 103 subjects in adult psychiatry (aged 18–64 years). During the current episode of hospitalization, all subjects were assessed for psychiatric disorders and for pain symptoms as part of this study. The study was approved by the local ethics committee of the University of Bielefeld, Germany. After a complete description of the study to the subjects, written informed consent was obtained.

Inclusion and exclusion criteria

Over a period of 4 months 125 patients admitted to a local psychiatric hospital were screened for eligibility. Of these 103 (85% inclusion rate; 19 non-responder) completed the interview and survey. Patients on two different wards in the department of general psychiatry were interviewed. The first ward utilized primarily a psychotherapeutic approach to management, whereas the other ward treated patients after any acute crisis, such as suicidal ideation or psychotic decompensation had been resolved. Eligibility criteria to participate in the study were: (i) Having a current diagnosis of general adult psychiatry; (ii) Being 18–64 years of age; (iii) Not qualifying for any of the exclusion criteria (see below); (iv) Having good command of the German language; (v) Having the ability to read and write.

Patients from other departments like those in addictive medicine, patients in acute settings and patients with active suicidal ideation were excluded. In addition, patients with any neurodegenerative disorder affecting the cognitive ability (i.e. dementia, severe form of Parkinson's disease) were excluded. No additional selection of the sample, for example by psychiatric diagnosis, gender, age or presence of acute or chronic pain was made.

Non-response

Of the 125 patients screened, five met the exclusion criteria, 14 refused to partake in the study, and three, who had initially consented, failed to complete the assessments.

Diagnosis of mental disorders

Psychiatric diagnoses were made by a specialist psychiatrist and independently re-investigated by a second specialist psychiatrist within 3 days of admission. Both specialists were blind to the study purpose. All diagnoses were made according to the International Classification of Disease 10 criteria by use of clinical psychiatric interview.[11] The specialists, who were blind to the specific study aim, were asked to determine the primary psychiatric disorder. For the classification of mental disorders in this study, the primary psychiatric diagnosis was obtained. Depression as a co-morbid diagnosis in patients with other psychiatric diagnoses (i.e. schizophrenia) was excluded. If a mental disorder could not be clearly diagnosed or classified at the time of recording, the diagnosis was declared as missing in this study.

Questionnaire

There are no valid psychiatric instruments for the assessment of physical pain in mentally ill patients; therefore we developed a pain assessment questionnaire for this study. As a quality criterion of the questionnaire, the guidelines of the German Society for the Study of Pain (DGSS) were used for the arrangement of the questionnaire. The following topics recommended by the DGSS were considered for our questionnaire:

- Identification of the persons; health insurance, GP, etc.

- A detailed subjective description of pain (localization, characteristic, course of pain over time, intensity, frequency, etc.).
- Pain decreasing or increasing conditions, co-symptoms.
- Course of disorder, including present diagnosis, treatment, medications and treating institutions.
- Somatic comorbidity.
- Pain related impairment and disability.
- Information on primary and secondary education, current work situation and retirement status; social situation.
- Social status (three categories: low/medium/high) was defined by the use of the following variables: school degree (low/high), current employment status (employed: yes/no) and level of current employment (laborer/employee/skilled laborer/self-employee/civil servant).

The format of the questionnaire was guided by the purpose of our study which was to assess the prevalence of pain and health service utilization among patients with primary psychiatric disorders. The relevant items are presented in the footnotes of the corresponding tables. The questionnaire was provided in the German language. None of the eligible patients opted out of the study due to difficulties with the German language. The self-report questionnaire was applied by the study doctor not involved in the decision making process on the psychiatric diagnosis.

Statistical analysis

Prevalence rates of pain were compared between subjects with and without major depression by applying the χ^2 test. Continuous variables such as the number of treatment modalities were compared between depressed and non-depressed subjects using the Student's *t*-test. The influence of a diagnosis of depression on pain specific service utilization was calculated with ANCOVA considering age, gender and social status as covariates.

RESULTS

Characteristics of the group are outlined in Table 1. Mean age was 38.7 ± 11.5 without showing significant differences between male (38.5 ± 8.8) and female (38.8 ± 12.9; p = 0.89) patients both with (38.7 ± 12.3) or without (38.8 ± 11.2; $P = 0.95$) a diagnosis of depression. Moreover, age was not related to the prevalence of pain in this sample. In total, 34.0% of the patients were diagnosed with major depression, whereas the remaining patients had a diagnosis of mood disorders (other than major depression: 22.2%), schizophrenia (19.0%), neurotic and somatoform disorders (19.0%), or personality disorders (5.8%). Patients with major depression were 68.6% women, and 31.4% men ($\chi^2 = 1.55$; $P = 0.21$). Pain symptoms were common across all diagnoses. Persons with depression had significantly higher rates of pain symptoms than those without over the last six (88.6% vs 69.1%) and twelve months (91.4% vs 69.1%). This difference held true for each single pain location except for chest/abdominal pain over the past twelve months, which was more common in those without major depression (Table 2).

Patients with pain and associated depression had similar patterns of accessing treatment modalities

Table 1. Demographic characteristics among 103 patients

	Depression			
Demographic variables	Yes %	No %	*P*-value*	Total
Gender			0.21	
Female ($n = 62$)	38.7	61.3		62 (58%)
Male ($n = 41$)	26.8	73.2		41 (38%)
School degree			0.79	
High ($n = 53$)	35.8	64.2		53 (44%)
Low ($n = 48$) Missing ($n = 2$)	33.3	67.7		48 (40%)
Current employment			0.49	
Yes ($n = 39$)	41.0	59.0		52 (49%)
No ($n = 53$)	30.2	69.8		39 (37%)
Retired ($n = 11$)	27.3	72.7		11 (10%)

**P*-value yielded from χ^2 test.

Table 2. Prevalence of pain among 103 depressed and non-depressed psychiatric patients

12 months prevalence across locations[†]	Back	Head	Neck / shoulder	Chest / abdomen	Arms / legs
Depression					
Yes ($n = 35$), %	60.0	48.6	42.9	25.7	31.4
No ($n = 68$), %	44.1*	47.1*	29.4*	36.8*	20.6*

Prevalence of all pain locations[‡]	2 weeks[‡]	6-months[§]	12-months[¶]
Depression			
Total	50.0	75.5	76.5
Yes ($n = 35$), %	54.3	88.6	91.4
No ($n = 68$), %	50.0	69.1**	69.1**

[†]Which part of your body was affected by any physical pain in the past 12 months (Selection of pain locations);
[‡]Do you currently (past 2 weeks) suffer physical pain? (yes/no);
[§]Have you suffered physical pain in the past 6 months? (yes/no);
[¶]Have you suffered physical pain in the past 12 months? (yes/no);
P-values of χ^2 test for differences of pain prevalence rates between depressed and non-depressed subjects: $*P < 0.05$ and $**P < 0.01$.

and disciplines as patients without depression (Table 3). There was however, a significant difference in the number of visits to general practitioners and to medical specialists for treatment of pain (Table 4). Patients without depression on average visited a doctor nearly twice as often over a twelve-month period as their depressed counterparts (4.9 vs 2.9). Patients without depression also saw a pain specialist more often and equally utilized treatment modalities for their pain. Patients with depression, however, were more likely to receive in-patient treatment for their pain symptoms. In a secondary analysis, excluding patients with neurotic or somatoform did not significantly change the reported results in relation to the prevalence rates of pain as well as to health service utilization rates. Overall, the results underline the relevance of pain in major depression.

Table 3. Disciplines* and modalities** for the treatment of pain among patients reporting pain with and without depression in the past 12 months ($n = 79$)

Depression	Yes ($n = 32$)	No ($n = 47$)	
	Mean (SE)	Mean (SE)	*P*-value*
Number of disciplines[a] consulted for treatment of pain			
Medical[c]	2.2 (0.4)	2.8 (0.4)	0.2
Psychological[d]	0.2 (0.07)	0.3 (0.07)	0.3
Surgical[e]	0.5 (0.1)	0.4 (0.1)	0.7
Number of applied pain treatment modalities[b]			
Medical[f]	1.3 (0.3)	1.6 (0.2)	0.5
Psychological[g]	0.4 (0.1)	0.7 (0.1)	0.2
Physical[h]	1.6 (0.3)	1.2 (0.2)	0.2

*P-value calculated by the Student's *t*-test.
**medical/psychological/physical modalities.
[a]Disciplines were counted once only.
[b]Treatment modalities were counted once only.
[c]Medical: GP, neurologist, anesthetist, orthopedics, internal medicine, urologist, obstetrics.
[d]Psychological: psychologist, psychiatrist.
[e]Surgical: general surgeon; neurosurgeon.
[f]Medical: medication, injections, nerve blockades, operations, nerve stimulation.
[g]Psychological: psychological counseling, psychotherapy, biofeedback, muscle relaxation.
[h]Physical: massage, acupuncture, physiotherapy.

DISCUSSION

This study explored whether depressed patients with co-morbid pain access medical treatment for their pain as much as their counterparts with a psychiatric diagnosis other than depression. Results showed that although they possessed higher rates of pain symptoms, depressed patients were less likely to attend medical and specialist services for their pain symptoms than their counterparts with a psychiatric diagnosis other than depression, however, as in-patients

Table 4. Utilization of pain specialized services compared to general medical services among depressed and non-depressed patients with pain in the past 12 months ($N = 79$)

Number of . . .	GP visits		Doctors for treatment of pain		Pain treatment modalities		Inpatient treatments	
Depression	Mean (SE)	*P*-value*	Mean (SE)	*P*-value*	Mean (SE)	*P*-value*	Mean (SE)	*P*-value*
Yes ($n = 35$)	2.9 (0.7)	0.032	2.3 (0.5)	0.034	3.3 (0.5)	0.48	2.0 (0.07)	0.008
No ($n = 68$)	4.9 (0.6)		3.8 (0.4)		3.3 (0.4)		1.7 (0.05)	

*ANCOVA with age, gender and social status as covariates for the influence of depression on service utilization;
GP visits: number of visits at GP in the past 12 months;
Doctor for treatment of pain: number of visits at doctors specifically for treatment of pain in past 12 months;
Pain treatment modalities: number of modalities for the treatment of pain in the past 12 months;
Inpatient treatments: number of admissions to hospital in past 12 months.

they tended to access more treatment for their pain symptoms.

The robust relationship between pain and depression has been amply documented in the published reports with theories that depression might increase pain perception or that depression is a common consequence of experiencing pain.[12,13] Indeed, medical utilization by psychiatric patients tends to be primarily described in the published reports in terms of the economic burden caused by this cohort.[14,15] However, our results indicate that people with co-morbid depression and pain manifest less health seeking behaviors. This is in contrast to individuals with other conditions such as anxiety disorders such as panic disorder.[16–18]

Barriers to care, including the expense of specialist services, are substantial and this might be responsible for this cohort of depressed patients failing to access specialty pain care. Interestingly, depressed patients with pain tend to access more medical in-patient services, again indicating that it might only be within the supervised in-patient health care setting that patient's pain difficulties are identified and managed. In 1997, Fishbain *et al.* undertook a review of the published reports on the relationship between pain and depression and posited the 'consequence hypothesis', which asserts that pain is a better predictor of depression than vice versa.[12] In this instance, patients presenting with chronic pain might be masking the existence of depressive illness. Alternatively to the 'consequence hypothesis', patients with pre-existing high scores on somatization before surgical treatment for back pain, have a significantly worse outcome 6 months after lumbar discectomy than those without preoperative somatisation.[19]

By contrast, whilst unipolar major depression is ranked as the number one cause of disability worldwide,[20] it is also a risk factor for other high burden conditions like cardiovascular disease (CVD),[21] therefore, under-treating of pain symptoms in this cohort, as found in the present study, could potentially be placing patients at risk of undiagnosed serious physical conditions like CVD.

The results indicate that it is important for practitioners to identify physical pain symptoms amongst depressed patients. In particular, being able to address the reasons for why these patients are not accessing services for their symptoms is imperative. It could be expected that depressed patients might think that the physical symptoms experienced are simply a by-product of their condition or there might be a sense of feeling unworthy to mention their ailments.

The present study would have benefited from researching the presentation of patients, that is, with anxiety disorders or at least anxiety symptoms, as it might be that their higher service utilization rates are a result of higher levels of anxiety than people who were in the depressed cohort. Consequently, the study ought to have included more comparative groups, such as people with other diagnoses like anxiety disorders or schizophrenia. In addition, the restriction of the study sample to inpatients does not allow a generalization of the findings to patients with depression, that is, to those with less severity of depression or patients with depression treated in the community. Given the high level of disability in these populations, an understanding of how co-morbid pain is managed by these groups would be of much interest. Measures of severity of social disability might also have provided a clearer picture of the presentation of the patients with co morbid pain and depression. As opposed to prospective studies, the cross-sectional nature of this study allowed no

evaluation of the causality between depression, pain and service utilization. Future studies should also employ measures of severity of depression and pain as well as semi-structured psychiatric interviews.

The results presented here have numerous implications for the identification and treatment of depression in psychiatric inpatient units. Findings highlight a need for practitioners to routinely investigate the existence of pain symptoms in depressed patients. The introduction of basic pain inventories might be a way to do this effectively. Future studies ought to address the limitations outlined here. Whilst pain symptoms can often be effectively treated with multimodal interventions, it is concerning that persons with depression are less likely to access medical interventions for pain, since this suggests they are being under treated and/or serious medical conditions are only being diagnosed at a more advanced stage. The recommendations made herein are in accordance with the provision of best clinical practice for improving treatment of depression and pain in psychiatric in-patient units.

ACKNOWLEDGEMENTS

We are grateful for the input of Martin Buehrig, MD, who contributed to the recruitment of the patient sample.

Competing interests

The authors declare that they have no competing interests.

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